Application No.: 09/447,227
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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions. and listings of claims in the application.

1-87. (Canceled)

88. (Currently Amended) A device for measuring a glucose concentration in a host, the device comprising:

a sensor operably connected to an electronic circuit and configured to continuously measure a signal associated with a glucose concentration in a host; and

a membrane located over at least a portion of the sensor, wherein the membrane is configured to control a flux of oxygen and glucose, wherein the membrane is configured to use oxygen from a biological fluid surrounding the membrane to catalyze a reaction of glucose and oxygen, and wherein the membrane comprises a silicone-containing polymer;

wherein the device is capable of exhibiting, at a glucose concentration of 400 mg/dL, no more than a 10% drop in sensor output over a range of pO_2 from about 150 mm Hg down to about 30 mm Hg.

89. (Previously Presented) The device of claim 88, wherein the membrane comprises a layer comprising an enzyme.

90. (Previously Presented) The device of claim 88, wherein the membrane is monolithic and homogeneous.

91. (Previously Presented) The device of claim 88, wherein the membrane is monolithic and heterogeneous.

92. (Previously Presented) The device of claim 88, wherein the membrane has a thickness of from about 15 microns to about 60 microns.

93. (Previously Presented) The device of claim 94, wherein the useful life of the device is at least 3 days.

94. (Previously Presented) The device of claim 88, wherein at least 95% of glucose concentration values measured by the device are within 25% of corresponding values determined by analysis of blood over a useful life of the device.

95. (Previously Presented) The device of claim 88, wherein the device is configured to respond substantially linearly to changes in glucose concentration at a glucose concentration of up to about 500 mg/dL.

96. (Previously Presented) A device for measuring a glucose concentration in a host, the device comprising:

a sensor operably connected to an electronic circuit and configured to continuously measure a signal associated with a glucose concentration in a host; and

a membrane located over at least a portion of the sensor, wherein the membrane is configured to control a flux of oxygen and glucose;

wherein at least 95% of glucose concentration values measured by the device are within 25% of corresponding values determined by analysis of blood.

97. (Previously Presented) The device of claim 96, wherein the membrane comprises a layer comprising an enzyme.

98. (Previously Presented) The device of claim 96, wherein the membrane is monolithic and homogeneous.

99. (Previously Presented) The device of claim 96, wherein the membrane is monolithic and heterogeneous.

100. (Previously Presented) The device of claim 96, wherein the membrane has a thickness of from about 15 microns to about 60 microns.

101. (Previously Presented) The device of claim 96, wherein the useful life of the device is at least 3 days.

102. (Previously Presented) The device of claim 96, wherein the device is capable of exhibiting, at a glucose concentration of 400 mg/dL, no more than a 10% drop in sensor output over a range of pO_2 from about 150 mm Hg down to about 30 mm Hg.

103. (Previously Presented) The device of claim 96, wherein the device is configured to respond substantially linearly to changes in glucose concentration at a glucose concentration of up to about 500 mg/dl..

104-112. (Canceled)

113. (Previously Presented) The device of claim 88, wherein the membrane comprises an interference layer.

114. (Canceled)

115. (Previously Presented) The device of claim 96, wherein the membrane comprises an interference layer.

116-133. (Canceled)

134. (Previously Presented) The device of claim 94, wherein the useful life of the device is at least 1 day.

135. (Previously Presented) The device of claim 94, wherein the useful life of the device is at least 2 days.

136. (Previously Presented) The device of claim 94, wherein the useful life of the device is at least 4 days.

137. (Previously Presented) The device of claim 94, wherein the useful life of the device is at least 5 days.

138. (Previously Presented) The device of claim 94, wherein the useful life of the device is at least 6 days.

139. (Previously Presented) The device of claim 94, wherein the useful life of the device is at least 7 days.

140. (Previously Presented) The device of claim 94, wherein the useful life of the device is at least 10 days.

141. (Previously Presented) The device of claim 94, wherein the useful life is defined by a period of time after stabilization of the device.

142. (Previously Presented) The device of claim 141, wherein the useful life is further defined by a period of time during which stability of calibration is maintained.

143. (Previously Presented) The device of claim 88, wherein the membrane comprises a urethane polymer or polyurethane.

144. (Previously Presented) The device of claim 143, wherein the urethane polymer or polyurethane comprises a polycarbonate-polyurethane backbone.

145. (Previously Presented) The device of claim 88, wherein the membrane comprises a cross-linked polymer.

146. (Previously Presented) The device of claim 88, wherein the device is capable of obtaining a calibration stability that is maintained within 10% for one week.

147. (Previously Presented) The device of claim 88, wherein the device is configured to respond substantially linearly to changes in glucose concentration at a glucose concentration of up to at least 400 mg/dL.

148. (Previously Presented) The device of claim 88, wherein the device is capable of attaining a 90% time response to a 100 mg/dL glucose concentration step in less than 5 minutes.

149. (Previously Presented) The device of claim 88, wherein the device is configured to reduce or eliminate motion artifact.

150. (Previously Presented) The device of claim 96, wherein the useful life of the device is at least 1 day.

151. (Previously Presented) The device of claim 96, wherein the useful life of the device is at least 2 days.

152. (Previously Presented) The device of claim 96, wherein the useful life of the device is at least 4 days.

153. (Previously Presented) The device of claim 96, wherein the useful life of the device is at least 5 days.

154. (Previously Presented) The device of claim 96, wherein the useful life of the device is at least 6 days.

155. (Previously Presented) The device of claim 96, wherein the useful life of the device is at least 7 days.

156. (Previously Presented) The device of claim 96, wherein the useful life of the device is at least 10 days.

157. (Previously Presented) The device of claim 96, wherein the useful life is defined by a period of time after stabilization of the device.

158. (Previously Presented) The device of claim 157, wherein the useful life is further defined by a period of time during which stability of calibration is maintained.

159. (Previously Presented) The device of claim 96, wherein the useful life is defined by a period of time after stabilization of the device.

160. (Previously Presented) The device of claim 159, wherein the useful life is further defined by a period of time during which stability of calibration is maintained.

161. (Previously Presented) The device of claim 96, wherein the membrane comprises a urethane polymer or polyurethane.

162. (Previously Presented) The device of claim 161, wherein the urethane polymer or polyurethane comprises a polycarbonate-polyurethane backbone.

163. (Previously Presented) The device of claim 96, wherein the membrane comprises a cross-linked polymer.

164. (Previously Presented) The device of claim 96, wherein the device is capable of obtaining a calibration stability that is maintained within 10% for one week.

165. (Previously Presented) The device of claim 96, wherein the device is configured to respond substantially linearly to changes in glucose concentration at a glucose concentration of up to at least 400 mg/dL.

166. (Previously Presented) The device of claim 96, wherein the device is capable of attaining a 90% time response to a 100 mg/dL glucose concentration step in less than 5 minutes.

167. (Previously Presented) The device of claim 96, wherein the device is configured to reduce or eliminate motion artifact.

168. (Previously Presented) A device for measuring a glucose concentration in a host, the device comprising:

an electrode surface operably connected to an electronic circuit and configured to continuously measure *in vivo* a signal associated with a glucose concentration in a host; and

a membrane located over at least a portion of the electrode surface, wherein the membrane is configured to control a flux of oxygen and glucose;

wherein at least 95% of glucose concentration values measured by the device are within 25% of corresponding values determined by analysis of blood over a time period of at least 2 days.

169. (Previously Presented) The device of claim 168, wherein the time period is at least 3 days.

170. (Previously Presented) The device of claim 168, wherein the time period is at least 4 days.

171. (Previously Presented) The device of claim 168, wherein the time period is at least 5 days.

172. (Previously Presented) The device of claim 168, wherein the time period is at least 6 days.

173. (Previously Presented) The device of claim 168, wherein the time period is at least 7 days.

174. (Previously Presented) The device of claim 168, wherein the time period is at least 10 days.

175. (Previously Presented) The device of claim 168, wherein the membrane comprises a urethane polymer or polyurethane.

176. (Previously Presented) The device of claim 175, wherein the urethane polymer or polyurethane comprises a polycarbonate-polyurethane backbone.

177. (Previously Presented) The device of claim 168, wherein the membrane comprises a cross-linked polymer.

178. (Previously Presented) The device of claim 168, wherein the device is capable of obtaining a calibration stability that is maintained within 10% for one week.

179. (Previously Presented) The device of claim 168, wherein the device is configured to respond substantially linearly to changes in glucose concentration at a glucose concentration of up to at least 400 mg/dL.

180. (Previously Presented) The device of claim 168, wherein the device is capable of attaining a 90% time response to a 100 mg/dL glucose concentration step in less than 5 minutes.

181. (Previously Presented) The device of claim 168, wherein the device is configured to reduce or eliminate motion artifact.